

What is claimed is:

## CLAIMS

- 1     1.     A method of dispensing a food product comprising the steps of  
2                     providing a substantially horizontal surface having a central axis and a pe-  
3     riphery;  
4                     positioning over said surface depositing means which deposit a selected  
5     amount of liquid product mix onto the surface while rotating the depositing means and  
6     surface relatively about said axis so that the liquid product mix spreads out on the surface  
7     and sets to form an at least partially solidified product layer;  
8                     scraping the layer from said surface as scrapings and consolidating the  
9     scrapings at said periphery, and  
10                    removing the consolidated scrapings as said food product.
- 1     2.     The method defined in claim 1 including the step of cooling said surface to a tem-  
2     perature low enough to at least partially freeze said liquid product mix to form said prod-  
3     uct layer.
- 1     3.     The method defined in claim 2 including the additional step of selecting an ice  
2     cream or yogurt mix for deposit by the depositing means.
- 1     4.     The method defined in claim 1 including the additional step of controlling the  
2     residence time of the liquid product mix on said surface depending upon the composition  
3     of said liquid product mix.
- 1     5.     The method defined in claim 1 including the additional steps of  
2                     monitoring the temperature of said surface, and  
3                     controlling the temperature of said surface depending upon the composi-  
4     tion of said mix.

- 1     6.     The method defined in claim 1 including the additional step of leveling the liquid  
2     product mix deposited on said surface to a selected thickness prior to its setting to form  
3     said product layer.
- 1     7.     The method defined in claim 1 wherein the removal step includes compacting the  
2     consolidated scrapings beyond said periphery into a selectively-shaped body of food  
3     product.
- 1     8.     The method defined in claim 7 including the additional step of depositing said  
2     body into a container.
- 1     9.     The method defined in claim 1 including the additional step of depositing food  
2     particulates onto said liquid product mix after the spreading thereof.
- 1     10.    The method defined in claim 9 including the additional step of controlling the  
2     amount of particulates deposited depending upon the composition of the particulates  
3     and/or of said liquid product mix.
- 1     11.    The method defined in claim 1 including the step of heating said surface to a tem-  
2     perature high enough to at least partially set said liquid product mix to form said product  
3     layer.
- 1     12.    A method of dispensing a food product composed of a plurality of ingredients  
2     which are mixed to form the food product, said method comprising the steps of  
3                providing a rotary surface having a substantially vertical rotary axis and a  
4     periphery;  
5                mixing together a liquid ingredient and a fluid ingredient to form a liquid  
6     product mix;  
7                depositing the liquid product mix onto said surface while rotating said sur-  
8     face about said axis so that the liquid product mix spreads out on the surface in a layer;

9                   cooling the surface to a temperature low enough to at least partially freeze  
10 said layer to form a product body;  
11                   scraping the product body from said surface as product body scrapings,  
12 and  
13                   collecting and compacting the scrapings to form the food product.

1   13.    The method defined in claim 12 including the additional step of  
2                   controlling the temperature of said surface and/or the residence time of the  
3 liquid product mix layer on said surface depending upon the composition of at least one  
4 of said liquid and said fluid ingredients.

1   14.    The method defined in claim 12 including the step of leveling the liquid product  
2 mix layer deposited on said surface to a selected thickness prior to the cooling thereof.

1   15.    The method defined in claim 12 including the additional step of depositing food  
2 particulates onto said liquid product mix after the spreading thereof.

1   16.    A method of dispensing a food product comprising  
2                   providing a substantially horizontal rotary surface having a central axis and a pe-  
3 riphery;  
4                   rotating said surface about said axis;  
5                   depositing a selected amount of liquid product mix on said surface while said sur-  
6 face is rotating so that the liquid product mix spreads out on said surface and sets to  
7 form a relatively thin, at least partially solidified product body;  
8                   scraping the at least partially solidified product body into a linear ridge row of  
9 scrapings aligned with said axis on said surface, and  
10                  removing the scrapings from said surface as said food product.

1   17.    The method defined in claim 16 and further including cooling said surface to a  
2 temperature low enough to at least partially freeze the liquid product mix deposited on  
3 said surface to form a frozen product body.

1 18. A method of dispensing a food product comprising the steps of  
2 providing a rotary surface having a central axis and a periphery;  
3 rotating the surface about said axis;  
4 depositing a selected amount of liquid product mix on the rotary surface while  
5 said surface is rotating so that the liquid product mix spreads out on the surface and sets  
6 to form an at least partially solidified product layer;  
7 leveling the liquid product mix on said rotary surface while said surface is rotat-  
8 ing to a selected height above said surface prior to the formation of said at least partially  
9 solidified product layer;  
10 scraping the at least partially solidified product layer into a ridge row of scrapings  
11 on said rotary surface, and  
12 removing the scrapings from said rotary surface as said food product.

1 19. A method of dispensing a food product comprising the steps of  
2 providing a rotary surface having a central axis and a periphery;  
3 rotating the surface about said axis;  
4 depositing a selected amount of liquid product mix on the rotary surface while  
5 said surface is rotating so that the liquid product mix spreads out on said surface and sets  
6 to form an at least partially solidified product layer;  
7 scraping the at least partially solidified product layer into a ridge row of scrapings  
8 on said surface, and  
9 removing the scrapings from said surface by pushing the ridge row into a forming  
10 cylinder located adjacent to said surface thereby compacting the scrapings into a shaped  
11 solid body within the forming cylinder and ejecting the shaped solid body from the  
12 forming cylinder as said food product.

1 20. The method defined in claim 19 including the additional steps of  
2 providing a container tray below the forming cylinder, said tray being moveable  
3 between a first position proximal to the forming cylinder so that a container thereon is in

4 position to receive the shaped solid body ejected from the forming cylinder and a second  
5 position disposed away from the forming cylinder, and  
6 moving the tray to the second position when a shaped solid body is within the  
7 forming cylinder and to the first position when the shaped solid body is in the container  
8 on the tray.

1 21. A method of dispensing a food product comprising the steps of  
2 providing a rotary surface having a central axis and a periphery;  
3 rotating said surface about said axis;  
4 providing a supply of product base;  
5 combining the product base and a gas in an aeration nozzle having an outlet so  
6 that a product base/gas mixture issues from said outlet;  
7 conducting said mixture from said outlet to said surface so that the mixture  
8 spreads out on said surface and sets to form an at least partially solidified product layer;  
9 scraping the at least partially solidified product layer onto a ridge row of scrap-  
10 ings on said surface, and  
11 removing the scrapings from said surface as said food product.

1 22. The method defined in claim 21 wherein the conducting step includes subjecting  
2 said mixture to confined turbulent mixing so that said mixture is delivered to said surface  
3 with a selected amount of aeration.

1 23. A method of dispensing a food product comprising the steps of  
2 providing a generally horizontal rotary surface having a central axis and a periph-  
3 ery;  
4 rotating said surface about said axis;  
5 depositing a selected amount of a liquid product mix on said surface while said  
6 surface is rotating so that the liquid product mix spreads out on said surface and sets as an  
7 at least partially solidified product layer, and  
8 scraping said product layer from said surface as scrapings and consolidating the  
9 scrapings adjacent to said periphery.

- 1 24. A method of dispensing a food product comprising the steps of  
2 providing a generally horizontal rotary surface having a central axis and a periph-  
3 ery;  
4 rotating said surface about said axis;  
5 depositing a selected amount of liquid product mix on said surface while said sur-  
6 face is rotating so that the liquid product mix spreads out on said surface and sets as an  
7 at least partially solidified product layer;  
8 leveling said liquid product mix on said surface to a selected height above said  
9 surface prior to the setting of said liquid product mix, and  
10 scraping said layer from said surface as scrapings and consolidating the scrapings  
11 adjacent to said periphery.
- 1 25. A method of dispensing a food product comprising the steps of  
2 providing a generally horizontal rotary surface having a central axis and a periph-  
3 ery;  
4 rotating said surface about said axis;  
5 depositing a selected amount of liquid product mix on said surface while said sur-  
6 face is rotating so that the liquid product mix spreads out on said surface and sets as an  
7 at least partially solidified product layer;  
8 scraping said product layer from said surface as scrapings and consolidating the  
9 scrapings adjacent to said periphery, and  
10 compacting said scrapings to form said food product.
- 1 26. A method of dispensing a food product comprising the steps of  
2 providing a generally horizontal rotary surface having a central axis and a  
3 periphery;  
4 rotating said surface about said axis;  
5 providing a plurality of liquid containers above said rotary surface, each container  
6 having an outlet;

7 selectively conducting liquid from the outlets of the containers to said surface so  
8 that a determined volume of liquid from each container may be deposited selectively on  
9 said surface to set as an at least partially solidified product layer, and  
10 scraping said product layer from said surface as scrapings and consolidating the  
11 scrapings adjacent to said periphery.

1 27. The method defined in claim 26 including the additional steps of  
2 applying a different scannable code to each container, and  
3 controlling the temperature of said surface in accordance with the code of the  
4 container from which said liquid is conducted.

1 28. The method defined in claim 26 including the additional steps of  
2 applying a scannable code to the surface of each container, and  
3 controlling the residence time of the liquid on said surface in accordance with the  
4 code on the container from which said liquid is conducted.

1 29. A method of dispensing a product comprising the steps of  
2 providing a substantially flat surface having an axis of rotation;  
3 rotating the surface about said axis;  
4 depositing a selected amount of a settable liquid product mix on said rotating sur-  
5 face so that the mix spreads out on said surface as a liquid layer;  
6 leveling said liquid layer on said surface to a selected liquid layer level;  
7 causing said liquid layer to set thereby forming an at least partially solidified layer  
8 housing a defined thickness, and  
9 removing said partially solidified layer from said surface.

1 30. The method defined in claim 29 wherein the causing step is accomplished by  
2 cooling said surface.

1 31. The method defined in claim 29 wherein the causing step is accomplished by  
2 heating said surface.



1 32. The method defined in claim 29 wherein the leveling step is accomplished by ad-  
2 vancing said liquid layer under a roller spaced from said surface.

1 33. Apparatus for dispensing a food product comprising  
2 a substantially horizontal rotary surface having a central axis and a periph-  
3 ery;  
4 motive means for rotating the rotary surface about said axis;  
5 depositing means spaced above the rotary surface for depositing a selected  
6 amount of liquid product mix on the rotary surface while said surface is rotating so that  
7 the liquid product mix spreads out on the rotary surface and sets to form a thin, at least  
8 partially solidified product body, and  
9 product delivery means disposed between said depositing means and the  
10 rotary surface, said delivery means including  
11 scraping means supported above the rotary surface and having a  
12 working edge engaging the rotary surface along a line extending substantially perpen-  
13 dicular to the direction of movement thereof while said rotary surface is rotating to scrape  
14 the at least partially solidified product body into a single ridge row on said rotary surface,  
15 and  
16 removing means for removing said ridge row from said rotary sur-  
17 face as said food product.

1 34. The apparatus defined in claim 33 and further including means for cooling said  
2 rotary surface to a temperature low enough to at least partially freeze the liquid product  
3 mix deposited on said rotary surface to form a frozen product body.

1 35. Apparatus for dispensing a food product comprising  
2 a substantially horizontal rotary surface having a central axis and a periphery;  
3 a motor for rotating the rotary surface about said axis;  
4 a depositing device spaced above the rotary surface for depositing a selected  
5 amount of liquid product mix on the rotary surface while said rotary surface is rotating so

6 that the liquid product mix spreads out on the rotary surface and sets to form a thin, at  
7 least partially solidified product body;

8 a scraper supported above the rotary surface and having a working edge engaging  
9 the rotary surface along a line extending substantially perpendicular to the direction of  
10 movement thereof while said rotary surface is rotating to scrape said at least partially so-  
11 lidified product layer into a single ridge row on the rotary surface, and

12 a removing device for removing said ridge row from the rotary surface to form  
13 said food product.

1 36. The apparatus defined in claim 35 and further including a refrigeration system  
2 connected to said rotary surface for cooling said rotary surface to a temperature low  
3 enough to at least partially freeze the liquid product mix deposited on said rotary surface  
4 to form a product layer which is at least partially frozen.

1 37. Apparatus for dispensing a food product comprising  
2 a generally horizontal rotary surface having a central axis and a periphery;  
3 a motor for rotating the rotary surface about said axis;  
4 a depositing device spaced above the rotary surface for depositing a selected  
5 amount of liquid product mix on the rotary surface while the rotary surface is rotating so  
6 that the liquid product mix spreads out on the rotary surface and sets as an at least par-  
7 tially solidified product layer, and  
8 a scraping device supported above the rotary surface for scraping said product  
9 layer from said surface as scrapings and consolidating the scrapings at said periphery.

1 38. The apparatus defined in claim 37 and further including a cooling device con-  
2 nected to said rotary surface for cooling same to a freezing temperature.